



Q

ACHIM SZEPANSKI 2019-09-07

## THE TRANS CLASSICAL MACHINE (G. ANDERS, H.D. BAHR, F. NEYRAT, G. SIMONDON)

MASHINES CAPITAL, G.ANDERS, MACHINES, MARXISM, TECHNOLOGY, TRANS CLASSICAL, TRANSINIDVIDUATION

If one follows the theory about technical objects as developed by the French theorist Gilbert Simondon (Simondon 2012), and then the statements of Frédéric Neyrat in the anthology Die technologische Bedingung (The Technological Condition, Hörl 2011), it is necessary for today's hyper-technical societies to fundamentally rethink the already disturbed identity of nature and technology (neither is there a total integration of nature into technology, nor is technology to be understood purely as an expression of nature) by using the machines or the technology of the future, technical objects, which by no means prolong human organs like prostheses or serve human beings only as a means of use, are first affirmed in their pure functionality, so that in their inconclusive supplementarity they can finally attain the status of coherent and at the same time individualized systems, the localizations of which are embedded in complex machine associations or networks.1 (ibid.: 37) Günther Anders had spoken almost simultaneously with Gilbert Simondon of machines as apparatuses, but of a world of apparatuses that had made the difference between technical and social designs obsolete, and had even rendered the distinction between technology and society in general irrelevant. (Anders 1980: 110) According to Günther Anders, every single technical device is integrated into an ensemble, is itself only a part of the device, a part in the system of devices - the apparatuses - with which it satisfies the needs of other devices on the one hand, and stimulates the need for new devices by its mere presence in other devices on the other. Anders writes: "What is true of these devices is true mutatis mutandis of all [...] of this system of devices, this macro-device, to claim that it is a 'means', that it is available to us for free use, would be completely pointless. The device system is our 'world'. And 'world' is something other than 'means'. Something categorically different." (Anders 2002: 2) Or to say it with the terms of Simondon, in view of our post-industrial situation we should speak of technical objects whose elements always form recursions and entertain inner resonances to each other, while the objects at the same time stand in outer resonances to other technical objects, in order to possibly be able to play out their own technicity in the mechanical ensembles as open machines. In addition, many technical entities develop a plural functionality, executing instead of executing several functions within a machine system, such as the combustion engine, whose cooling fins assume the function of cooling as well as amplification when they counteract the deformation of the cylinder head. Simondon has not adopted the deeply pessimistic view of post-industrial technologies as found in Günther Anders' work. Rather, in those technical objects that elude the hylemorphistic juxtaposition of form and matter still envisaged in the working model (matter formed by tools), Simondon has just identified a possibility for technology to approach nature's autonomy, a tendency that leads to the dynamic unity of the technical objects themselves, in that these and other objects are not in a position to be able to be integrated into the work model. a. incorporate a part of the natural world through the creation of associated milieus, the connection of their interior (resonance of different parts and multifunctionality of parts) with the exterior, with other objects, whether natural or artificial. The technical object cannot be completely separated from an excess of abstraction that characterizes the so-called artificial, heteronomous object. Simondon attributes the power of abstraction above all to the human being as his constitutive contribution to technology, who thus prevents the technical objects from concretizing themselves in open structures and playing off their tendency towards autonomy.2 (Neyrat 2011: 154) Simondon, however, is by no means tempted by the thesis that in a post-industrial future everything living must be rigorously subordinated to open technical ensembles; on the contrary, Simondon advocates a social concept of technical ensembles or open machine associations, in which the human being coexists with the "society of technical objects". But where man intervenes too decisively in the technical, we are dealing with heteronomous artificial objects, whereas the technical object at least tends towards an autonomy (it cannot completely abandon abstraction) that includes the natural moment: i.e. the unity and consistency of a machine system. Paradoxically, for Simondon it is precisely the artificial that prevents technology from gaining autonomy. (ibid.) According to this, the technical object is always based on a lack of technicality, whereas the technical object is to be concretized in coherent processes, whereby every local operation of the technical object is to be integrated into a comprehensive arrangement of the mechanical ensembles. (Hegel defines the concrete as that which includes the relational, while the abstract is regarded as one-sided or isolated. The terms "concrete" and "abstract" therefore do not designate types of entities, such as the material and the immaterial, but they are used to describe the way in which thinking is related to the entities. Thus, as Hegel often

explains, the abstract can prove to be the most concrete and the concrete the most abstract. A materialistic concept must be able to explain what constitutes the reality of a conceptually formed abstraction without, however, wanting to hypostasize the form. It must be able to show how abstractions are "treated" by social practices, whereby the latter are more than just work processes that form matter, if they repeatedly reposition themselves in a very specific way, i.e. also concretize themselves in relation to the concretizing technical objects, as Simondon proposes.) Thus the technical object always functions in associated milieus, i.e. it is connected with other technical objects or it suffices itself, and in doing so it must always respect nature.

Simondon's technical objects refer to their embedding in network structures, whereby he foresees the contemporary coupling of technical objects to the digital, information- and computation-intensive ecology of new media as early as the 1960s, the dispositive of digital, transformational and modular technologies including a non-intentional and distributed neo-subjectivity deformed by machine speeds. A subjectivity situated at the interfaces of the technological and monetary currents flowing at the border of the speed of light, where it proves to be flexible, modular and recombinable through all self-relationships to the extreme. Almost in tune with cybernetics, Simondon is also aware that the machine is not used as or like a tool, but rather that it is operated. Technical objects are neither prostheses of the human being, nor, conversely, can the human being be completely dissolved as a prosthesis of the machines. First of all, the technical objects should be conceived purely in terms of their functionality, and this with regard to their explainable genesis, in the course of which, according to Simondon, they increasingly concretize (not abstractize) themselves on the basis of an immanent evolution, beyond the adaptation and expediency of their use or their fixation as means. However, the technical object is not a creative agent in its own right, it remains confined in an economic and scientific context, and the process of its concretization asserts synergetics, the interaction with other functional subsystems by modifying and completing the functionality of the technical object. The movement of the concretization of the technical object includes the organization of functional subsystems, in which the technical object matures into a technical ensemble, which in turn is characterized by comprehensive social, economic and technical processes and their structuring. Concretisation also means the tendency towards innovation, in which a series of conflicting requirements are satisfied by multifunctional solutions of individual technical objects, which create causal cycles in order to integrate the respective requirements. Technical elements (parts of the machine), technical individuals (machine as a whole) and technical ensembles (machine as part of social, technical and economic systems) are each already in a dynamic relationship that potentially releases a process of technological change. However, the economy is not dominated by the media/machines; rather, capital and its social economy continue to determine the technological situation in the final instance. We are dealing with a feedback loop, with the economy and its social environments on the one hand, and the machine ensembles on the other. The economy nourishes the machines, sets the conditions and simultaneously uses their knowledge for the organization of their fields of power, while conversely the machine ensembles shape the consistencies of the economy, its communications and its power relations, its way of shaping the social and subjectivizing processes.

According to the French theorist Frédéric Neyrat, the identity between nature and technology that has ever been disturbed refers to the "Hyperjekt", which describes the mechanical autonomization of technology in relation to human actants as well as the material substitution of the material by the artificial, without, however, having to assume a total integration of nature into technology. (ibid.: 168f.) (Technology as a detachment from nature, as a substitution of natural materials by plastics, and as a detachment of technology from man by means of mechanical autonomy. It must be assumed that machines and their materials are in a relationship of interference.) One can identify the hyperjekt as a substitution and autonomization milieu (materials and machines) of the technical, independent of subject/mind and object/nature, whereby one should not speak of associations, but of superimpositions with regard to the contextualization of the two milieus, if one thinks about the internal and external resonances of the technical objects.

Post-industrial technology, e.g. Gotthard Günther's concept of the transclassical machine, is in between nature and spirit, because precisely because of the processes of double detachment it is forbidden to reduce the transclassical machine purely to scientific-human creation, since it follows an independent logic of reflection. It is about the transclassical machine, whose essential function is to deliver, transform and translate information. The information articulates the difference that makes a difference, as Gregory Bateson sees it, but not because the smallest unit of information, a bit, as Bateson assumes, is simply given, but because, as Bernhard Vief writes in his essay Digital Money, there are two: bits are immaterial, relative divisors, they stand for a movement of differentiality that is neither present nor absent, and thus the binary code, the binary sequence of numbers, can only be positioned as an effect of the alternance that articulates them. As Lacan has shown with the example of the cybernetic machine, the articulated is of the same order as the symbolic registers, whereby the switches of the switching algebra represent the third of that order. The articulation, which itself is neither open nor closed, only indicates the possibility of the purely positional states.]The transclassical machine can be mapped neither on the object nor on the subject, rather it holds a trivalent logic: subject, object and the transclassical machine as hyperject. The hyperjekt thus belongs neither to nature (object) nor to the spirit (subject), and thus it is subject to an exteriority that, however, is by no means to be understood as the outsourcing of the interior of a subject, but rather indicates an independent "region of being" - it contains a trivality that proves its incompleteness per se, because it does not synthesize the opposites (subject and object) - on the contrary, these non-trivial machines (Heinz von Foerster) are ever withdrawn from the complete analysis as well as from the synthesization. At this point, however, the concept of technical being must put up with the question of whether the media of technical objects can be captured ontologically as modes of dispersion into open spaces or the dispersion of space itself. In the last century, Second Order Cybernetics had created its own constellation of concepts (feedback, autopoiesis, temporal irreversibility, self-referentiality,

etc.) that had long since immigrated into mathematical models or computer simulation. Although this does not dissolve the material substrate or the physicality on which those processes sit, the autonomous-immanent relations and interactions of a multi-level complexity reign here, with complexifications taking place in each individual contingent process: Systems transform random events into structures, and conversely, certain events can also destroy structures, so that a single system indicates a continuous fluctuation between disorganization and reorganization as well as between the virtual and the actual in almost every conceivable case. Gotthard Günther has above all tried to present the ontological implications of these forms of knowledge and has introduced the concept of polycontextuality. In a polycontextural world context, the transclassical machines that operate in a divide or as the third between subject/spirit or object/nature are scattered over a multitude of objects, qualities and differences. (Neyrat 2011: 165f.) These transclassical machines are conceivable as ensembles of universes, each of which can raise an equivalent demand for objectivity without having to represent or even eliminate the demands of other ensembles. In it, the concept of the contexture is a continuum of potential reality that changes shape with each quantification. Günther therefore speaks of the contingency of the objective itself, whose difference does not convey an intelligible hierarchy, with the consequence that in these technological fields we are dealing less with classifications or taxonomies, but with decision-making situations and flexible practices. On the other hand, the computers known to us so far operate only auto-referentially, i.e. they cannot process the difference between their own operations and the environment within themselves.

Frédéric Neyrat introduces the so-called holoject as a fourth level of technology, which in contrast to the hyperject as a medium of absolute connectivity refers both to the subject and to the object, to the superposition of both components, which is always continuous, unstable and endless. (ibid.: 168f.) As such, the holoject does not exist, but it can transfer its continuity properties to the hyperiect and thus give it shape, which we then call an organless body, a mechanical ensemble that is machinic in all its parts. This in no way leads to the fusion of areas (subject/object, knowledge/thing, etc.), but rather, in accordance with quantum physics, to the assumption of superpositions in which, for example, two waves retain their identity when they generate a third wave, which, however, neither represents a synthesis of the two preceding waves nor their destruction, but, according to François Laruelle, indicates a non-commutative identity. Idempotence, a term from computer science, includes a function that is linked to itself or remains unchanged through the addition of further functions, so that the generative matrix persists as a noncommutative identity through all variations without ever requiring transcendence. According to Neyrat, idempotence is the characteristic feature of the holoject, which, in terms of idempotence, focuses primarily on the function of the "and", i.e. on the insistence of subjunctive syntheses, and this leads us to an open technical structure, in which the technical object, as an "inbetween", already appears with a certain delay, and as an inexhaustible reserve of the technical medium itself. In this context, McLuhan's formula "The medium is the message" does not postulate an identity of terms, nor is the message degraded to a mere effect of technical structures; rather, something resounds in the "is" that recurs in the medium as difference, virulence, or dissension, without it ever being possible to shut it down. The message of the medium occurs in the fact that difference only joins a media "together" in order to return as disparation in it and to repeat itself as difference, thus simultaneously undermining its previous technical modes and modifications. At this point Jean-Luc Nancy speaks of an eco-technique of intersections, twists and tensions, a technique that is alien to the principle of coordination and control, and as a structure he describes this pure juxtaposition, this unstable assembly without any sense.

Alexander Galloway has defined the black box with regard to the cybernetic situation as an apparatus in which primarily the inputs and outputs are known or visible, with the various interfaces establishing their relationship to the outside. Whereas in Marx's fetishism critique of the commodity was still about deciphering the mystical shell in order to penetrate to the rational core, in today's post-industrial technologies, on the other hand, which constantly produce the commodity information, the shell that functions purely via the interfaces is open and visible, while at the same time the core remains invisible. The interactive interfaces occupy the surfaces in the black boxes and usually allow only selective passageways from the visible outside to the opaque inside. Blackboxes function as nodes integrated into networks whose external connectivity is subject to strict architecture and management that remains largely invisible. According to Vilém Flusser, the camera can be regarded as exemplary for most devices and their function. His agent controls the camera to a certain extent by controlling the interface, i.e. by means of input and output selections, but the camera controls the agent precisely because of the opacity of the inside of the black box. For Simondon, on the other hand, digital technologies with their visually attractive and "black-boxed" interfaces would prove to be highly problematic today. These technologies usually derive their popularity from a suggestive aesthetics of the surface; they attract the user to the surface. They do not attract the user because they offer him the possibility of indetermination of technology, of flexible couplings between machines and with the human, as Simondon may consider worthwhile. Simondon insists that the fundamental movement of technological development is not an increase in automation, but rather the emergence and evolution of those open machines that are susceptible to social regulation. In the case of black boxes, on the other hand, we are dealing with technological objects that are described as ensembles of readable rational functions, and this with regard to their input-output relations that are as smooth as possible, whereby on the one hand their core remains invisible, and on the other their material construction in the discourse at best still exists as a rather negligible speaker. Simondon, on the other hand, urges us to take a look inside the blackboxes.

In addition, the problem of connectivity with regard to the non-emitting, transmitting machines has to be considered, which have a plurality of processes and effects, and this proves to be a matter of highest economic relevance, if these machines produce multiple machine functions and effects in and with their complexes, contrary to a one-dimensional chain of effects, even releasing explosions of previous machines and thus producing new conjunctions. "The spheres of production and energy

technology, transport, information and human technology indicate vague field definitions of machines in which the machineenvironmental is already inscribed," writes Hans-Dieter Bahr (Bahr 1983: 277), and in principle the mechanical ensembles and processes can thus be described as transmitting information, information into which also natural, economic and social structures and processes, including their postponements, complexifications and layer changes, enter, whereby it is by no means just about communications, but also about absorptions and filters of the information itself, about the manipulation of the data qua algorithms - and thus the respective relations and programming/functionalizations could also be decoded inside the technical objects themselves, which, however, the hegemonic discourses on technology almost obsessively know how to prevent. In contrast to the darkening of the interior of the black boxes, Simondon pleads for a discus that focuses on the perfect transparency of the machines. The aim here is to recognize potentials and relations that are sometimes already condensed in the machines, and which then concretize themselves qua a functional overdetermination of the technical objects. For Simondon, the machines represent something like mediators between nature and man, which we have to grasp, among other things, in the dicourses on media. The machine, as Hans-Dieter Bahr explained in his paper Über den Umgang mit Maschinen, could therefore be described less as the concept of an object "machine" than as a discursive formation. (ibid.: 277). Every (digital) machine is functionalized by programming, whereby it quickly becomes apparent, however, that the mere description and maintenance of the constructive functions does not necessarily mean that a machine has to "function"; rather, the manifold dysfunctionalities of the machines must be taken into account, which can cross the functioning system of input and output relations at any time, accidents, crashes, crises, etc., and which are the result of the "machine". (It may well happen that a deceleration of the machine speed is cost-saving for an economy as a whole, think, for example, of the (external) climate costs that are not incurred, although the deceleration for the individual capital increases costs; a machine may well become obsolete due to competition between companies, i.e. from an economic point of view, although it is still fully functional in terms of materials, a constellation that Marx called moral wear and tear). The in-between of the machines or the machine transmissions, respectively, enormously block a teleological view: The outputs of the complex machines are today less than ever commodities, which are mostly already further machine inputs, but produce much more complexes of effects including the unintended side effects, with which the machines themselves mutate into the labyrinthine and therefore constantly need new programming and functionalities for orientation and control in order to maintain their input selections and outputs, because the machines are supposed to function in particular through the rule-guided supply of programs, materials, information and by controlling the input-output relations.

Possible outputs of the machines can be utility values, but also other dysfunctions that disturb the continuous operation of the machines - but most of these outputs are inputs into other machines. So machines emit energy and information streams that are cut or interrupted by other machines, while the source machines of the emitted streams have themselves already made cuts or withdrawals from other streams, which in turn belong to other source machines. Every emission of a current is thus an incision in another emission and so on and so forth, at least that is how Deleuze/Guattari see it in Anti-Oedipus, At the same time a double division emerges with the mechanical incisions, whereby the concept of the incision does not ascend as meaning from one inside to then be translated or transported into the inside of another, but rather something is indicated in the communication of the incision that already "exists" as an outside, e.g. a network of mechanical series that flee in all directions. ( Each communication or translation takes place over an inexpressible incision into which the net divides. This division remains unexpressive in the message, but only because an open space is opened that allows everything to be communicated and expressed. And these divisions take place today via interfaces. Interfaces are usually referred to as significant surfaces. An extension of conceptuality takes place when it is conceived as transitions or passages, when it is described as thresholds, doors or windows, or when it is furthermore understood in the sense of a flexibilisation of input selections as fields of choice, whereby we can then speak of an intraface that identifies itself as an indefinite zone of the translations of inside and outside. The intraface opens the machine structures in an indefinite way to associated milieus, with which we are ever confronted with open machines or processes in which several intrafaces are always integrated, namely as effects of the translations that function or do not function, whereby even this distinction is questionable if one considers that machine transmissions simply cannot do without manifold side effects and disturbances.

Now the cybernetic hypothesis is characterized precisely by the fact that it defines the technological object or the technical system by the sum of the inputs and outputs, whereby black boxes (computers, data objects, interfaces, codes) permanently have to eliminate dysfunctional inputs. Among the unfavorable inputs are climatic conditions, incomplete classifications, influences of other machines, faulty programs, economy, wear, etc., and it is up to the cybernetic machines to absorb these structures and correct them according to their own criteria, and these transformations in turn affect the outputs. When machine systems select and transform different types of input, this means that a multitude of economic, social, natural, cultural, and legal functions count among their inputs as well as among their expenditures. (Bahr 1983: 281) Here, the disciplining function of the feedback mode of cybernetic control loops, the attempt to feed back outputs to inputs in such a way that dysfunctional inputs can be faded out or eliminated in the future, or at least more functional selections of the inputs take place than before, becomes quite evident. Cybernetics is thus characterized not only by automation, but above all by the mechanism of input selections. If now the human element is taken out, one speaks of the automaton. This contradicts of course a posthuman situation as Gilbert Simondon had still imagined it: When Simondon's technical objects individualize themselves, they are always also in external resonance, whereby the resonances in between of the technical individual and the associated techno-logical milieu insist, creating a recursive causality in between. But cybernetics wants to subject the in-between entirely to its automatism or to its input selections, whereby the identity of living beings and machine is thought of purely from the point of view of the automaton, while Simondon

conceives the asymptotic analogy between the human and the machine for him from the perspective of the machines that have ever been oriented towards open spaces and associated milieus, which in turn corresponds to a certain affirmation of nonselective inputs and a variety of stratagems that continue themselves as incisions, divisions and crossings of the machine milieus. Today, technical objects are generally integrated into digital networks, with the corresponding architecture of the protocols regulating their information exchange among themselves, which sprawls over a complex topology of densifications and dispersions, and even from this a cultural force would probably arise for Simondon. This does not use the machines, but confirms that cultural dignity lies precisely in the recognition of the pure functioning of the technical objects, with which the human being only enters into a dialogue with the technical ensembles and this dialogue can lead to a true transindividuality. We speak here generally of technicity. If the input and output selections are considered on the basis of their intersecting contingencies, then we are not dealing with more automatons, but actually with open machines - and concretization then means appreciating the contingency of the functions as well as the interdependence of the elements in order to do justice to their inner resonance, which makes them probable machines, which cannot be measured against the ideal of precision, but display different degrees of precision by expanding their range of application, expanding into new areas, until they occupy or at least affect all fields of the social, cultural, economic and technological, as in the case of computer technology, though in a usurping manner. It is the process of disparation between two realities, in Deleuze's sense the disparation between the virtual and the current, which ultimately activates information differently from the digital and sets in motion a process of individuation that comes from the future. Information is located less on the homogeneous level of a single reality than on at least two or more disparate levels, e.g. a 3-D topology that knots our posthuman reality; it is a fabrication of reality that folds the past and the future into the present, as an individuation of reality through disparation that is information in itself. If individuation encompasses the disparation of the virtual and the current, then information is always already there, already the present of a future present. What is called past or present is therefore mainly the disparation of an immanent source of information, which is always in the process of dissolution. For Simondon, the idea of the capacity or potential of a technical object is closely linked to his theory of individuation. The individual object is never given in advance, it must be produced, it must coagulate, or it must gain existence in an ongoing process. The pre-individual is not a stage that lacks identity, it is not an undifferentiated chaos, but rather a condition that is more than a unit or an identity, namely a system of highest potentiality or full potentials, an excess or a supersaturation, a system that exists independently of thinking.

Digital networks today not only encompass the globe that they themselves generate, but they also penetrate into the social microstructures of the capitalist economy, whose human agents in turn subject them to permanent addressability, online presence and informational control. (Lenger 2013) Being "online" today becomes a hegemonic mode of existence, the permanently mobilizable availability is part of a flexible normalization that affirms the user in toto with the practice of everyday wellness, cosmetics and fitness programs until, in the course of their permanent recursion with the machines, they finally completely incorporate the processes of normalization. In the postscript on the control societies, Deleuze described human agents as "divinees", mostly a-physical entities, infinitely divisible and condensable to data representation, which, precisely because of the effects of a-human technologies of control, at some point act similarly to computer-based systems. At present, we can at least assume that there is a homology between post-Fordist management methods, which propagate non-hierarchical networks, self-organization, flexibility and innovation in heroic litanies, and the neurosciences, which describe the brain as a decentralized network of neuronal aggregates and emphasize neurological plasticity (Christine Malabou) as the basis for cognitive flexibility and adaptation. According to Catharine Malabou, neuronal and social functions influence each other until it is no longer possible to distinguish between them. At the very least, we must start from the possibility that the human species, with the rapid translation of its own material history in data streams, networked connectivity, artificial intelligence and satellite monitoring tends to become a decalcomania of technology. If events - mobile apps, technological devices, economic crises, digital money, drone wars, etc. - process at the speed of light, then the reference systems of traditional techno discourses will definitely be destabilized, and their definitions and hypotheses as useful indicators of what the future of hyper-accelerated capitalism could still bring will increasingly fail. The darkening of clearly defined boundaries between bodies and machines, the interpenetration of human perception and algorithmic code, the active remixing of the components of humans, animals, plants and inanimate objects - all this leads to the injection of a fundamental technological drift into the social, cultural and economic, while the economy and its machinery continue to determine the technological. Implemented in social reality, the currently important signifiers of technological acceleration include concepts such as "big data", "distant reading" and "augmented reality", with which capital as power shoots the words and discourses still bound to gravity into the weightless space of the regime of computation. There will be more migrations into this weightless space in the future, for example, of thoughts in mobile technologies, and at the same time we will have to deal with an increasing volatility in the field of digital financial economics, triggered by trading algorithms based on neural networks and genetic programming, we will dive further into the relational networks of social media, and last but not least we will be confronted with a completely distributed brain modulated by experiments in neurotechnology. Nothing remains stable, everything is in motion.

IMuch of the history and science of technology, as Simondon notes, had up to then been animated by an instrumentalism whose restrictive perspective conceived the machines either as an extension or replacement of organs, or as a projection of human thought, and this notion is based on an image of thought in which the individual and society are entirely under the law of scarcity.

2 Ernst Bloch, too, has in principle held hope to the utopian moment of the technical: "Meanwhile, it is precisely the triumph of non-euclidean practice, which is represented by the technique of radiation, that calls salutary anticipations from the image of a

society that is no longer apparatized to the plan. In technology, these concrete utopian lines emerge particularly clearly from the task of a concrete subject-object relationship". (Bloch 1979: 777)

Anders, Günther (1980): Die Antiquiertheit des Menschen 2. On the Destruction of Life in the Age of the Third Industrial Revolution. Munich.

(2002): The Antiquatedness of Man 1. About the Soul in the Age of the Second Industrial Revolution. Munich.

Bahr, Hans-Dieter (1983): On the use of machines. Tübingen.

Neyrat, Frederic (2011): In: Hörl, Erich: The technological condition. Contributions to

← PREVIOUS NEXT →

## META

CONTACT

FORCE-INC/MILLE PLATEAUX

IMPRESSUM

DATENSCHUTZERKLÄRUNG

## **TAXONOMY**

CATEGORIES

TAGS

**AUTHORS** 

ALL INPUT

## **SOCIAL**

FACEBOOK

INSTAGRAM

TWITTER

6 of 6